

# GEORGE ENGELMANN BOTANICAL NOTEBOOKS

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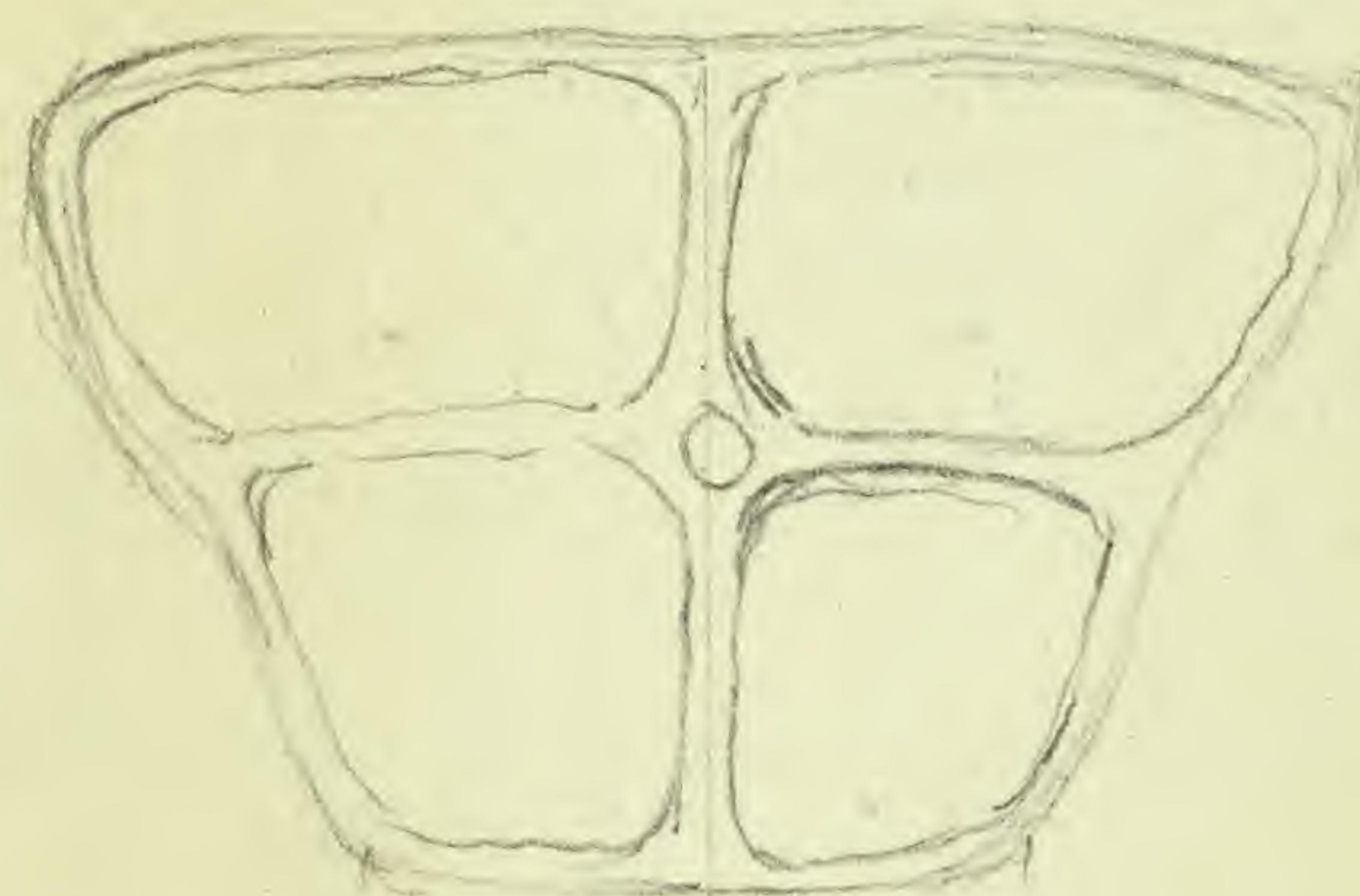
W.2

*Isotoma Pugolmanni*

July 29 1866

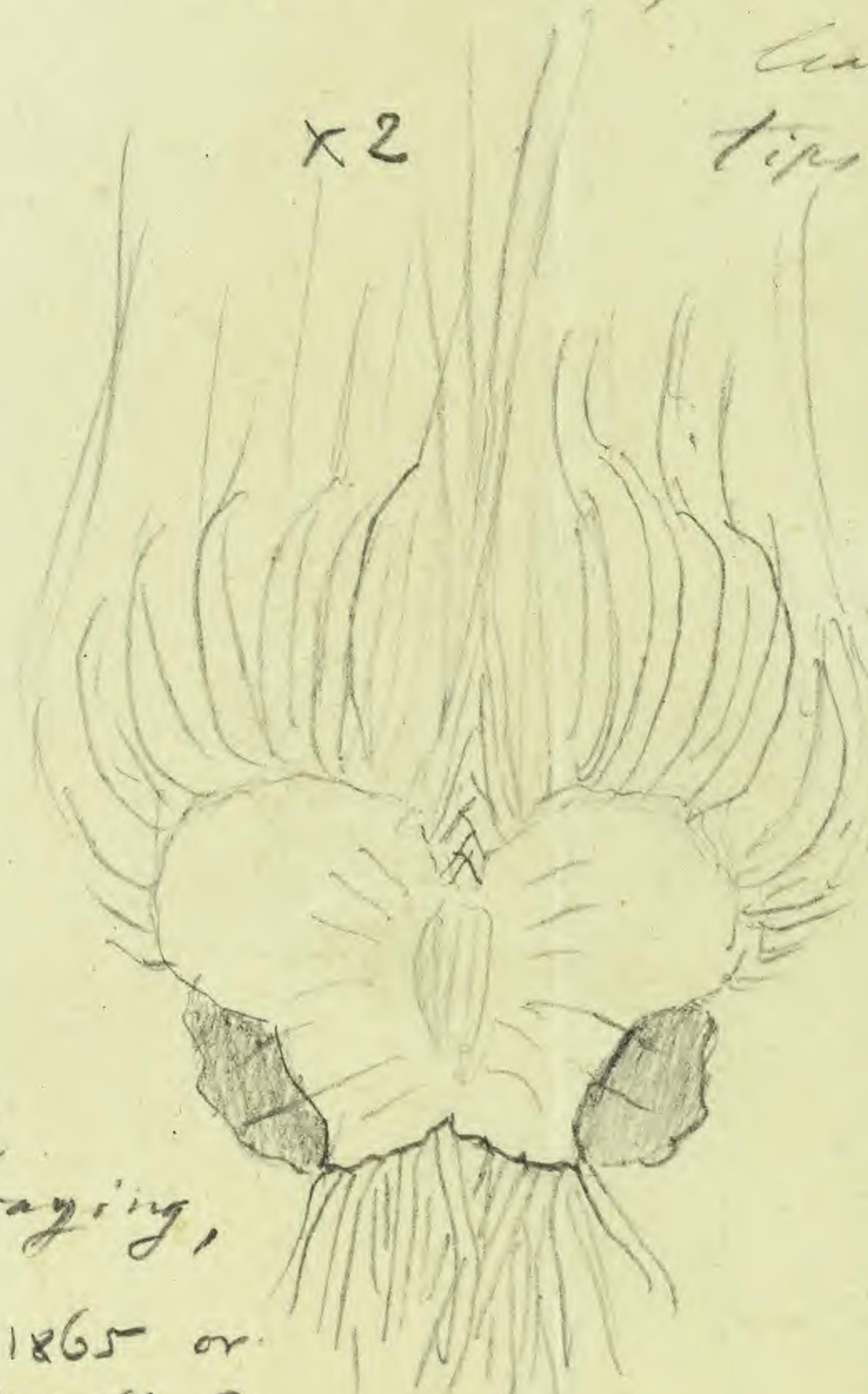
Wm M. Canby July 23 1866

section



largest leaves

$\times 10$



Halves of old bulb  $\times 2$   
decaying,  
blackish brown -  
Are these the growth of 1865 or  
rather the older growth of 1866?

an inner leaf

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0 1 2 3 4 5 6 7 8 9 10

cm



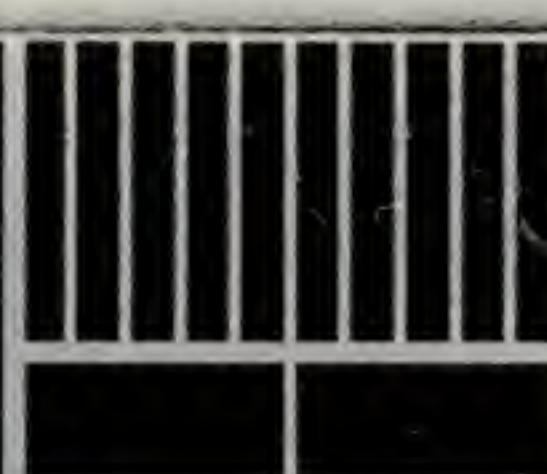
MISSOURI  
BOTANICAL  
GARDEN

13797

ALEX. LEITCH,

APOTHECARY & CHEMIST,

Cor. 4<sup>th</sup> & Olive Sts., St. Louis.



0 1 2 3 4 5 6 7 8 9 10

cm

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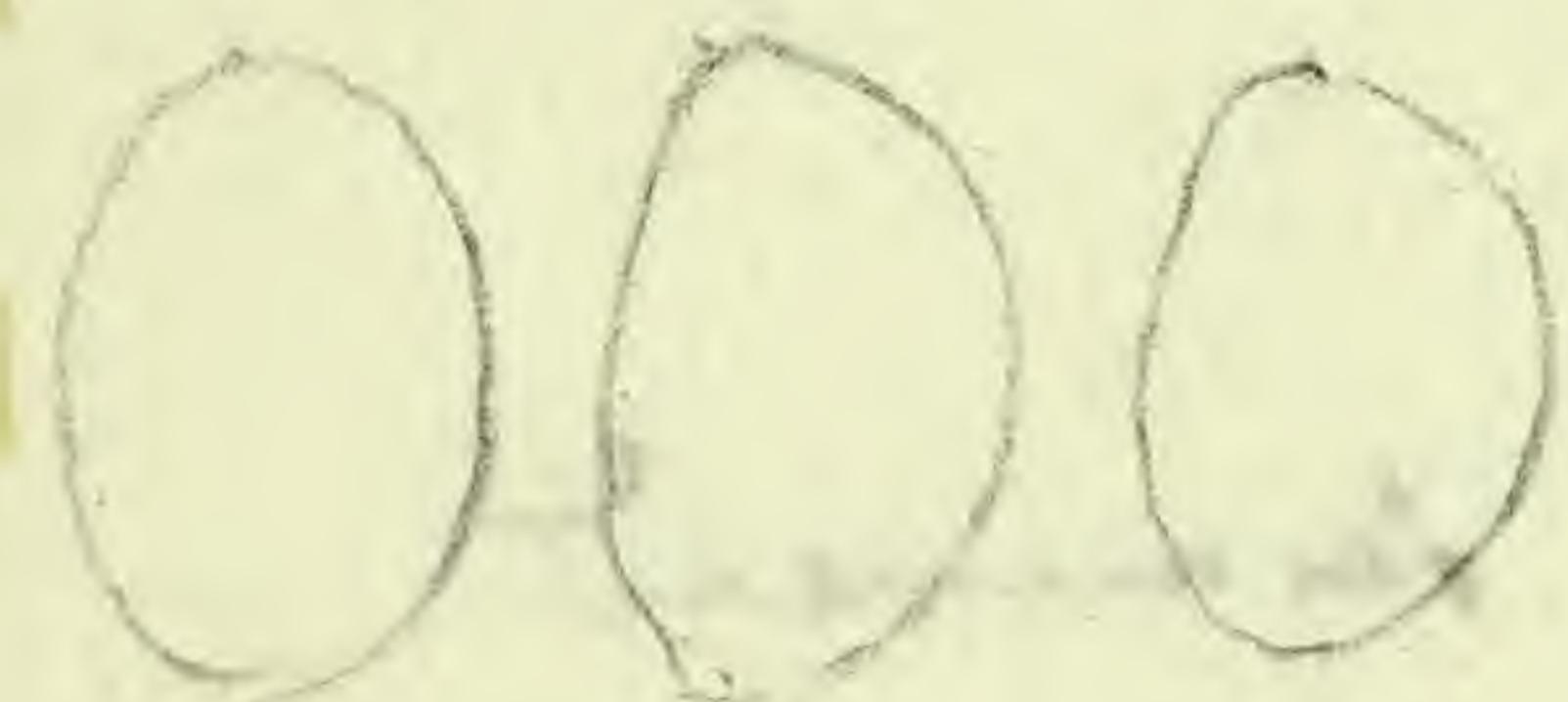
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over

Isoetes L. L. L. L.  
Rhodocladus virginicus

Sept 21 1866

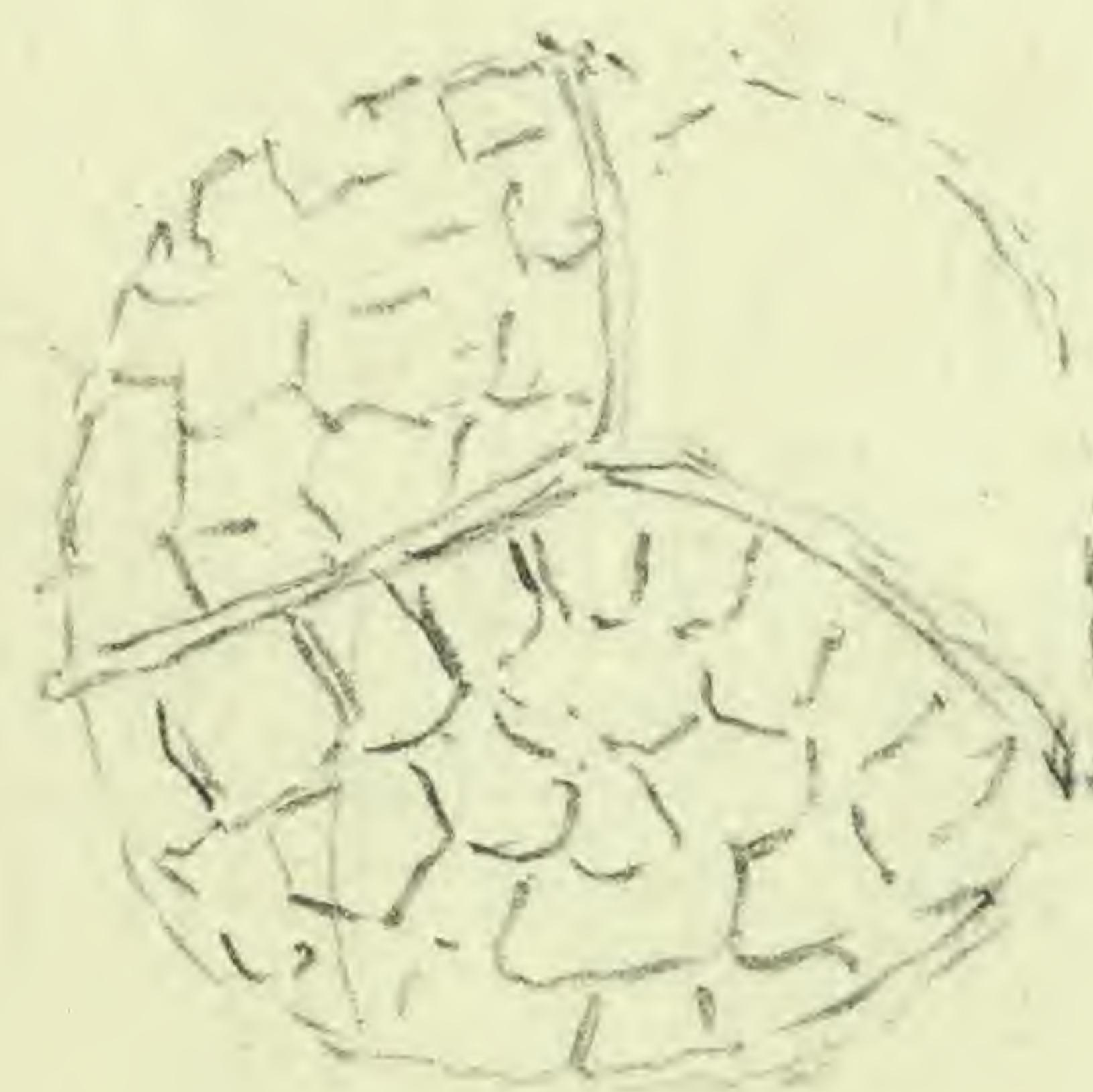
x 415



$\frac{11-12}{415} =$

0.027-0.029  
mm

x 60



$\frac{26-29}{60} \text{ mm} = 0.43-0.48 \text{ mm}$

mean size 0.46 mm

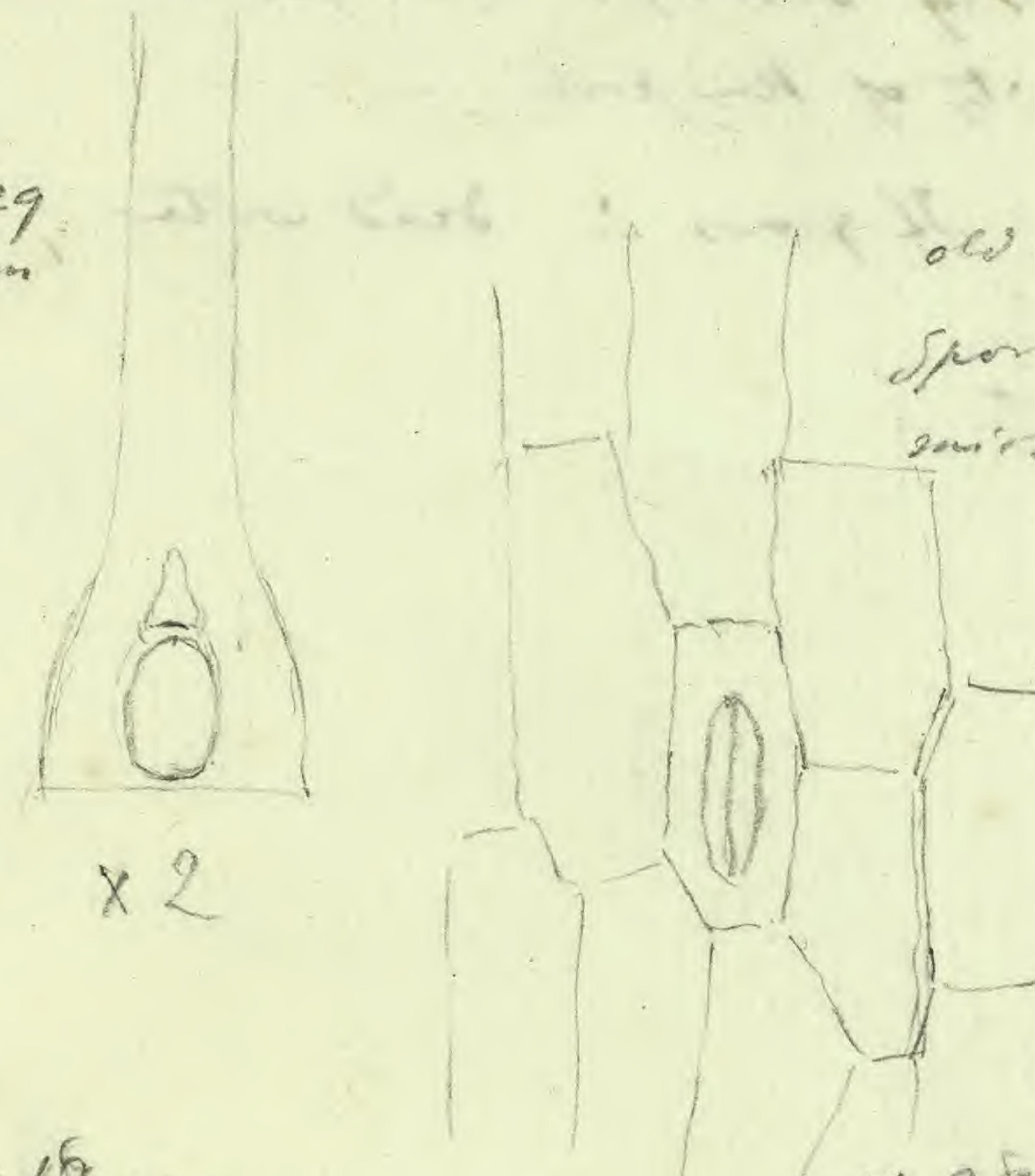
Dry specimens

fol 8-12

10-12 inches  
long

old note says:

Spores 0.40 mm diam  
microspores 0.028 mm long  
Succothedge



x 280

stomata very few  
(stomata abundant 1/6/67)

June 25 1867

Sp. bushy, regular.

8 segments,  
very thin, 2-

3 layers of cells  
walls also thin



0 1 2 3 4 5 6 7 8 9 10

cm

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APPARATE AND CEMENT,

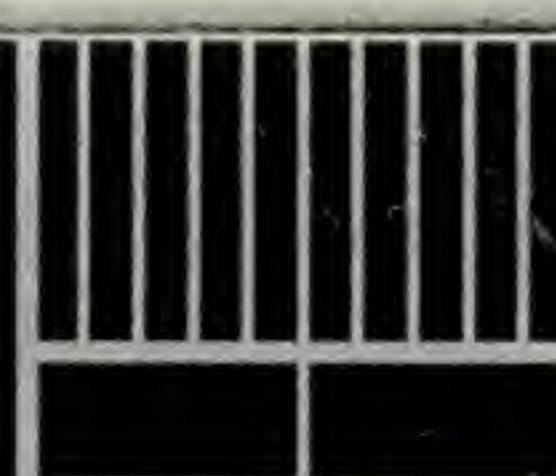
Marble Building, Cor. Fourth and Olive Streets,

ST. LOUIS, MO.

& Denee writer Sept. 27. 1866 :

I had this spec's 5 or 6 years ago from Mr. Thurber  
later Prof. Bridges brought home some specimens from the  
vicinity of Newport --

It grows in dead water, completely immersed



0 1 2 3 4 5 6 7 8 9 10

cm

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N. 1 a  
valida

Hoover man

Aug 28 1866

Wm H Darby July 23 1866

sect through shorter diameter of bulb

sect. through  
centre

sect. through side  
parallel with last.



0 1 2 3 4 5 6 7 8 9 10

cm

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0

1

2

3

4

5

6

7

8

9

10

cm

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51 a.

*Iscoites nov. valida*

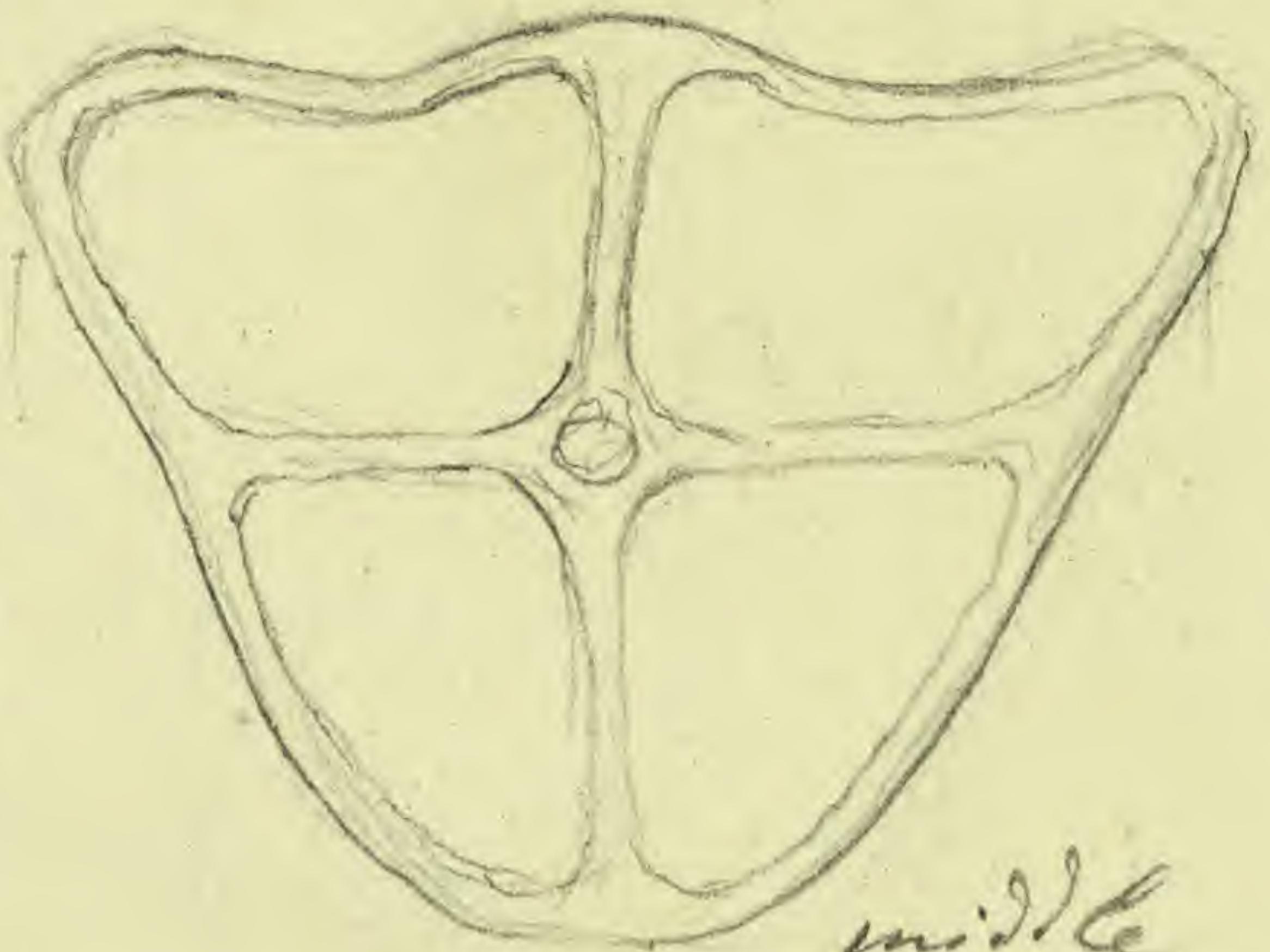
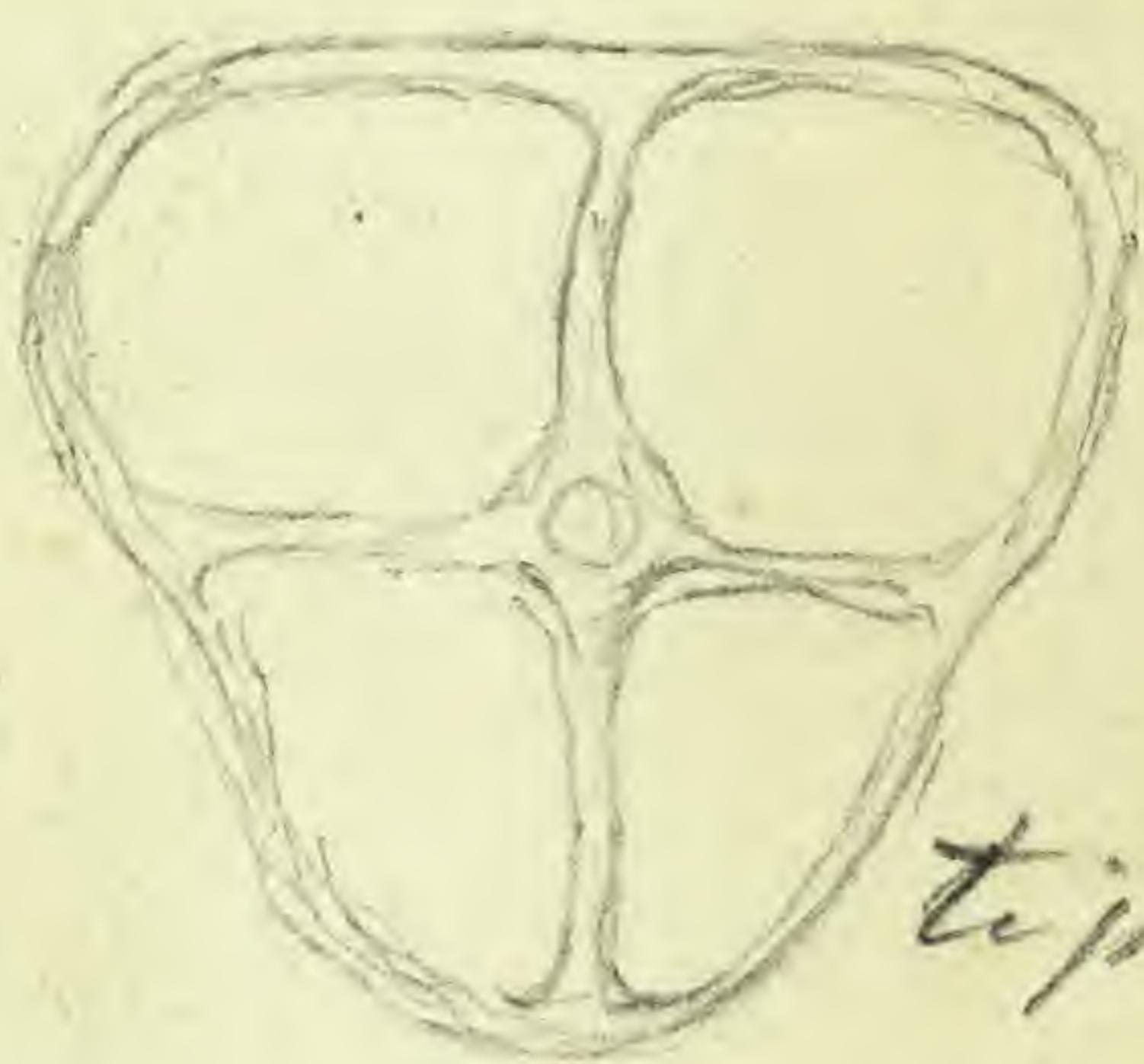
Wilmington, Del., July 23<sup>rd</sup>

July 27 1866

sections of leaf

one

$\times 10$

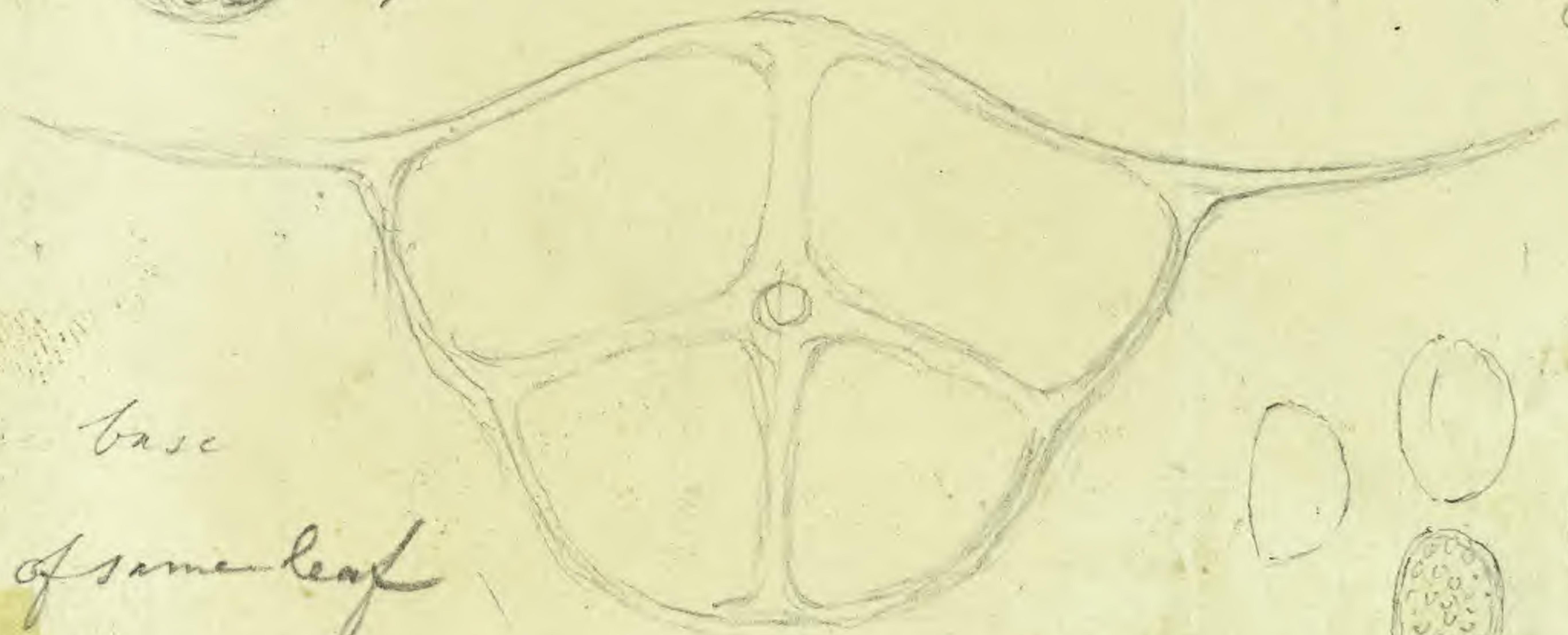


middle

$\times 60$



$\frac{26}{60}$



base

of same leaf

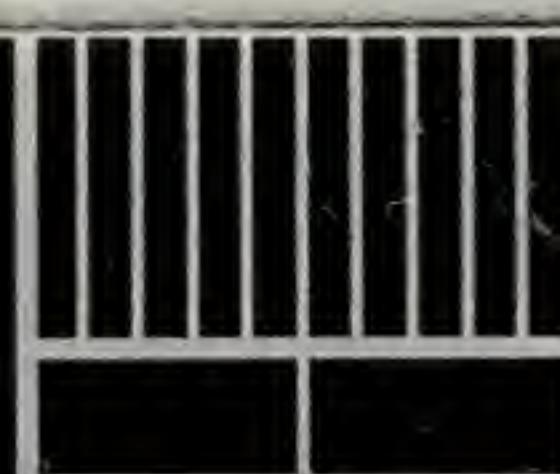
$\times 2$

Sporangia  $\times 60$   
0.140-0.48  
mostly 0.43  
-0.44

$\times 415$

macrosporangia  
outer leaf

microsporangia  
200 trabeulae



0 1 2 3 4 5 6 7 8 9 10

cm

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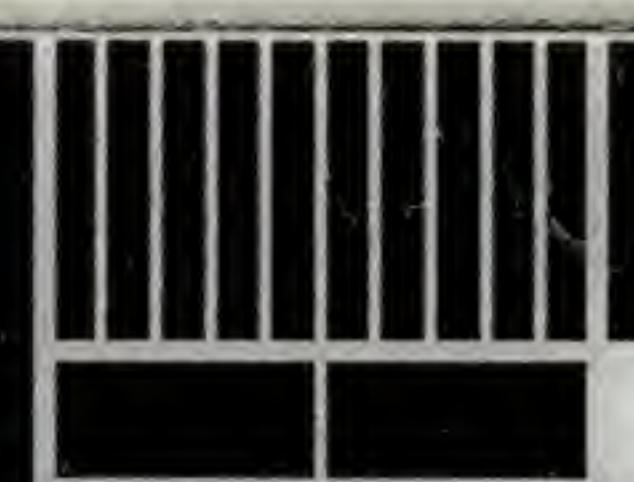
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0 1 2 3 4 5 6 7 8 9 10

cm

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N. 1. 6.  
valida  
all x2

*Trotter agrestis* valdiv  
or Leningt. July 23 1866

July 28 1866  
won by Comby

Sect. Through longer diameter of bulb



0 1 2 3 4 5 6 7 8 9 10  
cm

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0 1 2 3 4 5 6 7 8 9 10

cm

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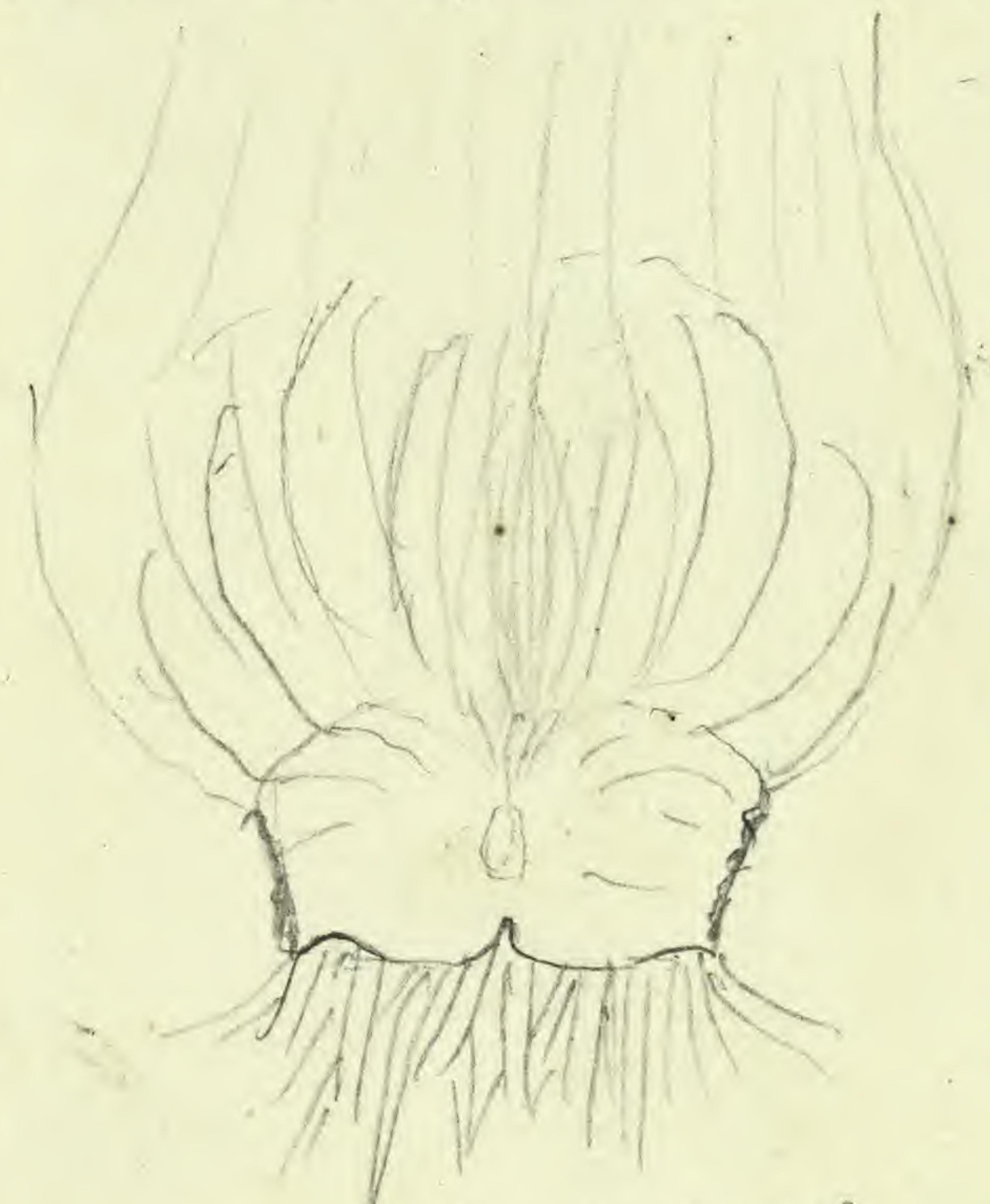
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No. 1. c

*Succowia minima var. valida*  
Canby, Washington July 23<sup>rd</sup> 1866

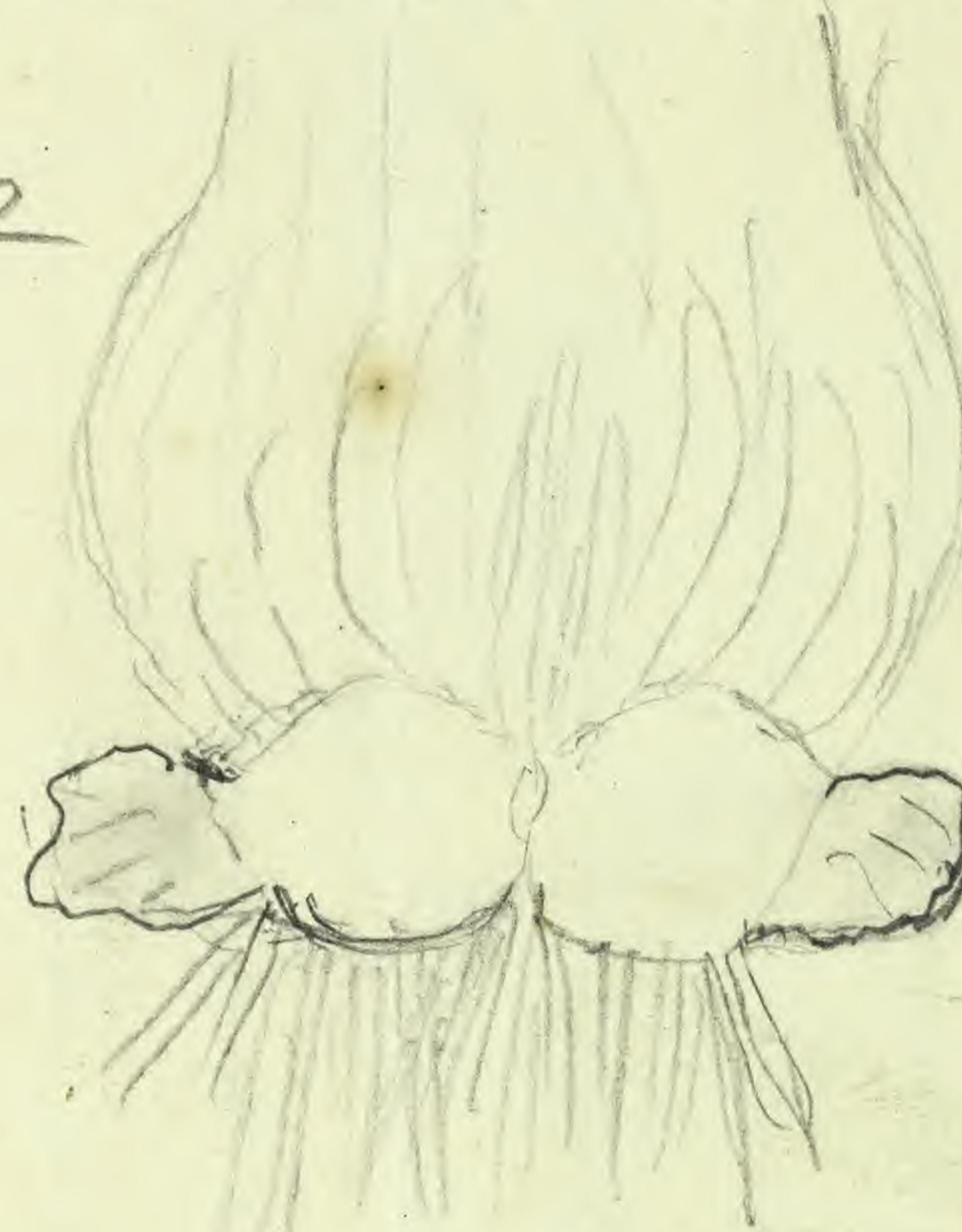
July 28 1866

smaller specimens with 40 or 50 leaves 16-18 inches long



old parts of bulb  
have fallen off  
completely

×2



Keeled leaves

old parts of bulb  
still fresh, only a little  
less white than young bulb



0 1 2 3 4 5 6 7 8 9 10

cm

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0 1 2 3 4 5 6 7 8 9 10

cm

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Dec 14 1866

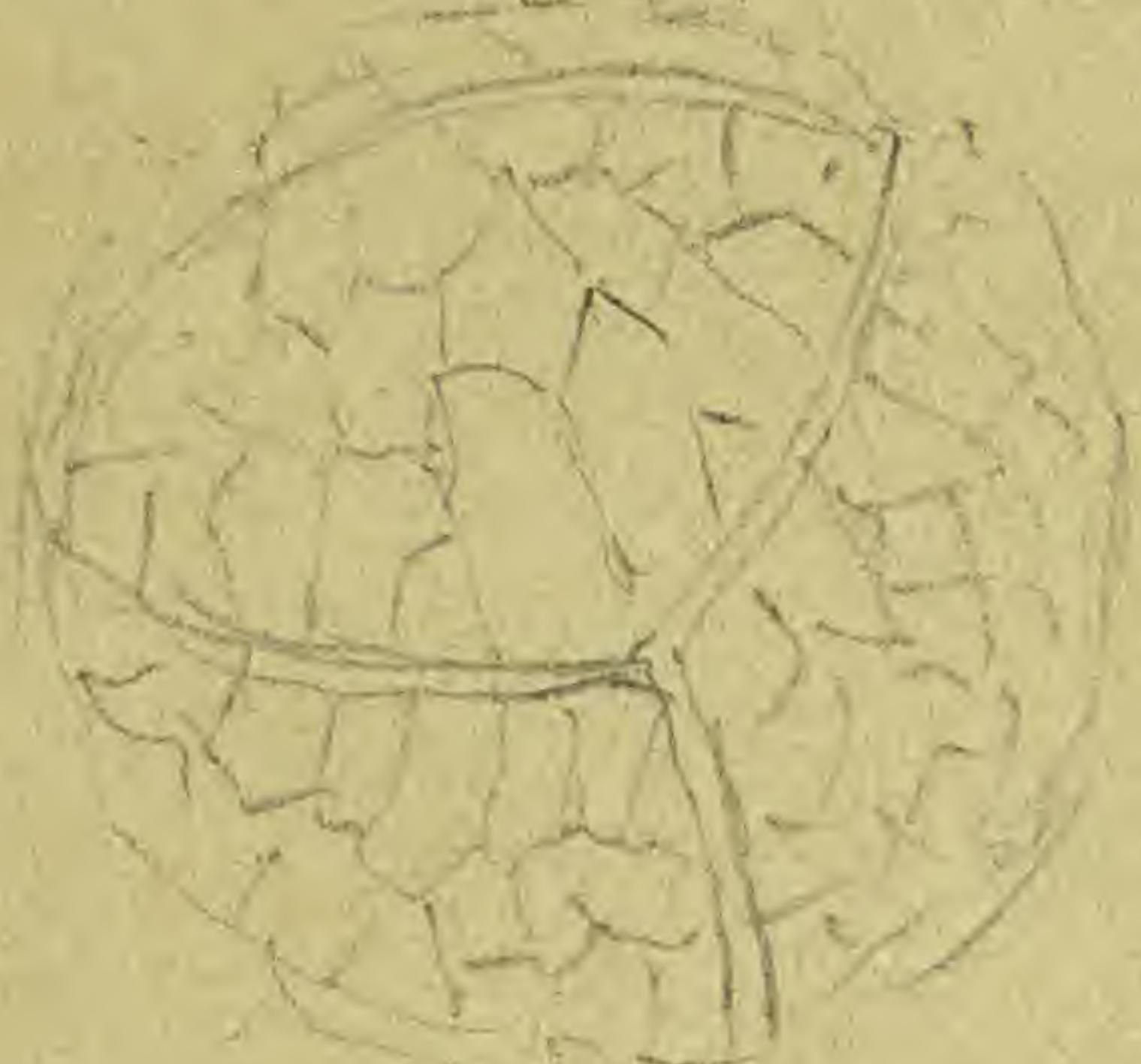
from minor boreal

"Brattleborough Vermont 18"

Diam of spores 0.38-0.45 mm

ex Hb. Gray

$\frac{1}{60}$



$\frac{10.5-11.5}{315} = 0.025-0.028 \text{ mm}$

sporangia all

$\times 280$



$\times 2$



Stomata (apparently  
rare (not very  
distinctly seen))



0 1 2 3 4 5 6 7 8 9 10

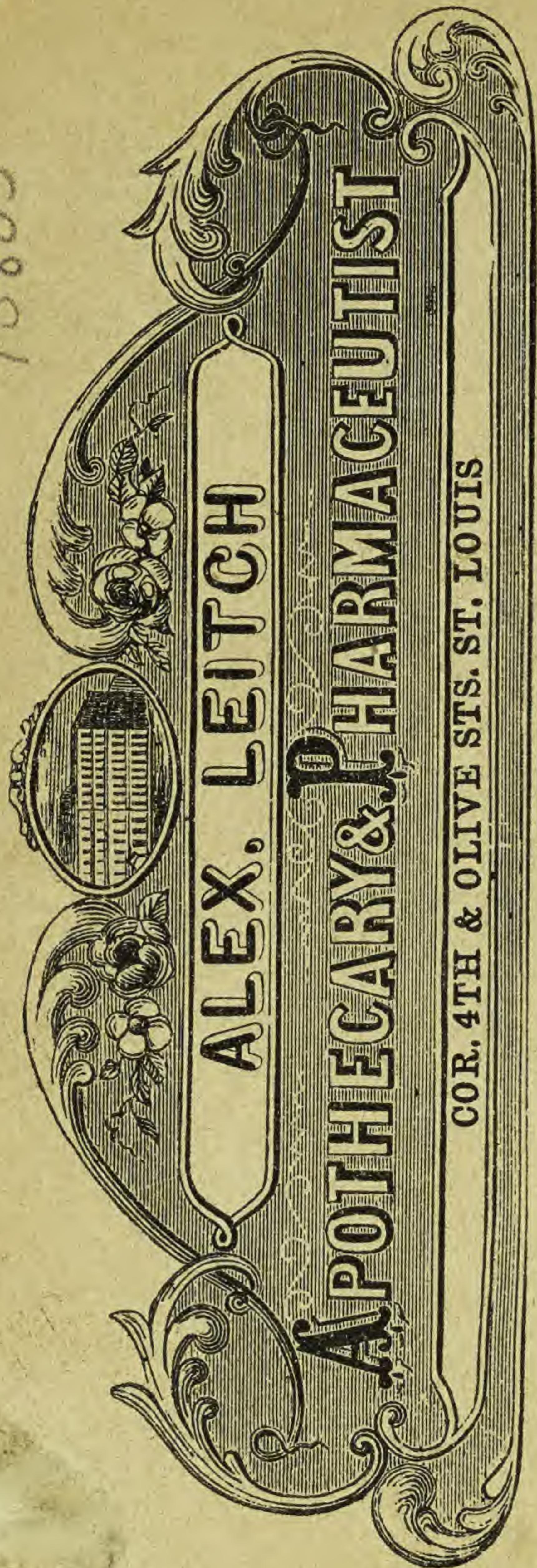
cm

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0 1 2 3 4 5 6 7 8 9 10

cm

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Zoster Engelmanii

Dec 24 1866

Fresh Water Tidal shore, New Haven Ct 1857.

(with *Tillaea*, *Cladina*, *Limosella*, *Rhizanthes*, *Prostanthera*

<sup>scop</sup>  
S.C. Eaton

1111

macrospore favoso-reticulata

Diam  $\frac{22.5-26.5}{60} = 0.37-0.44$  mm

14-15 layers

9-12 cm

60

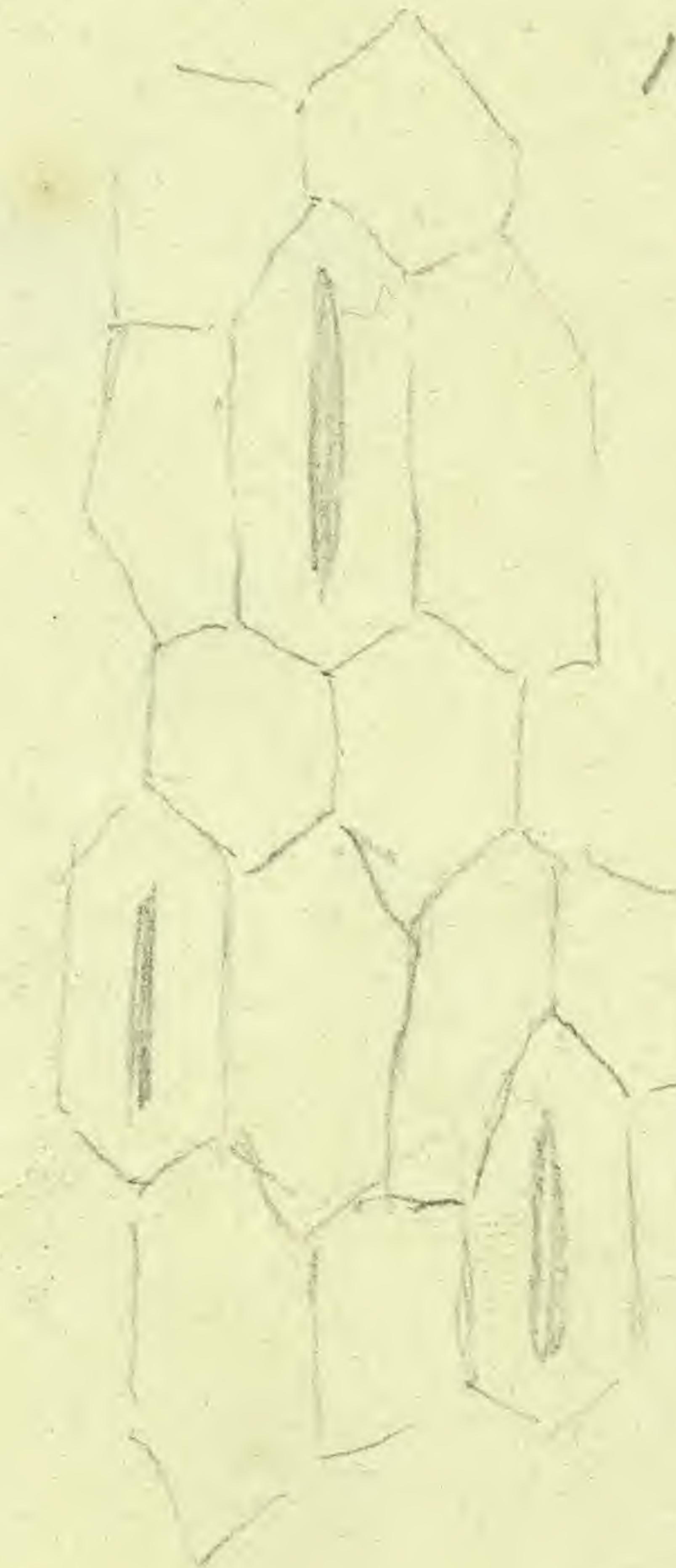


0.025-0.028 mm

4 distinct but very feeble  
radicles  $\frac{26}{6} 67$

no doubt, but true Engelmanii!

Sporangia reexamined



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cm

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0 1 2 3 4 5 6 7 8 9 10

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*Isotoma glauca* var. *grisea* Dec 11 1866  
Uxbridge Mass S. J. W. Robbins, & H. G. Gray  
16 leaves

$\frac{24-28}{60} = 0.40-0.47$  mm

diam of Spores

22-25 centim.

at base & nearly 8 mm  
diam

very similar to the *Aethriostola*  
plant  
probably not from Uxbridge, but from Colebrook,  
Conn. U.S.A.



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cm

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cm

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J.W. Robbins No. 13 Isoetes longiloba Sep 28 1866  
var. gracilis  
diam of macrosporangia  
1111  
$$\frac{23.0 - 27.2}{60} = 0.38 - 0.45 \text{ mm}$$

Shallow Mountain stream on gravelly  
bottom, Colebrook, Connecticut

no brown scleroderm  
cells



0.023 - 0.024 mm

June 25 1867

4 regular test bracts

x2

very few  
stomata



macrosporangium



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cm

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*Isocladus validus*

July 29 1866

Th. C. Porter, Smithville, Lancaster Co. Aug 1865

exterior leaves  
with short bases

rec<sup>2</sup> for E. Durand.

× 2

Spores 0.38 - 0.47 mm diameter

mostly 0.42 - 0.43

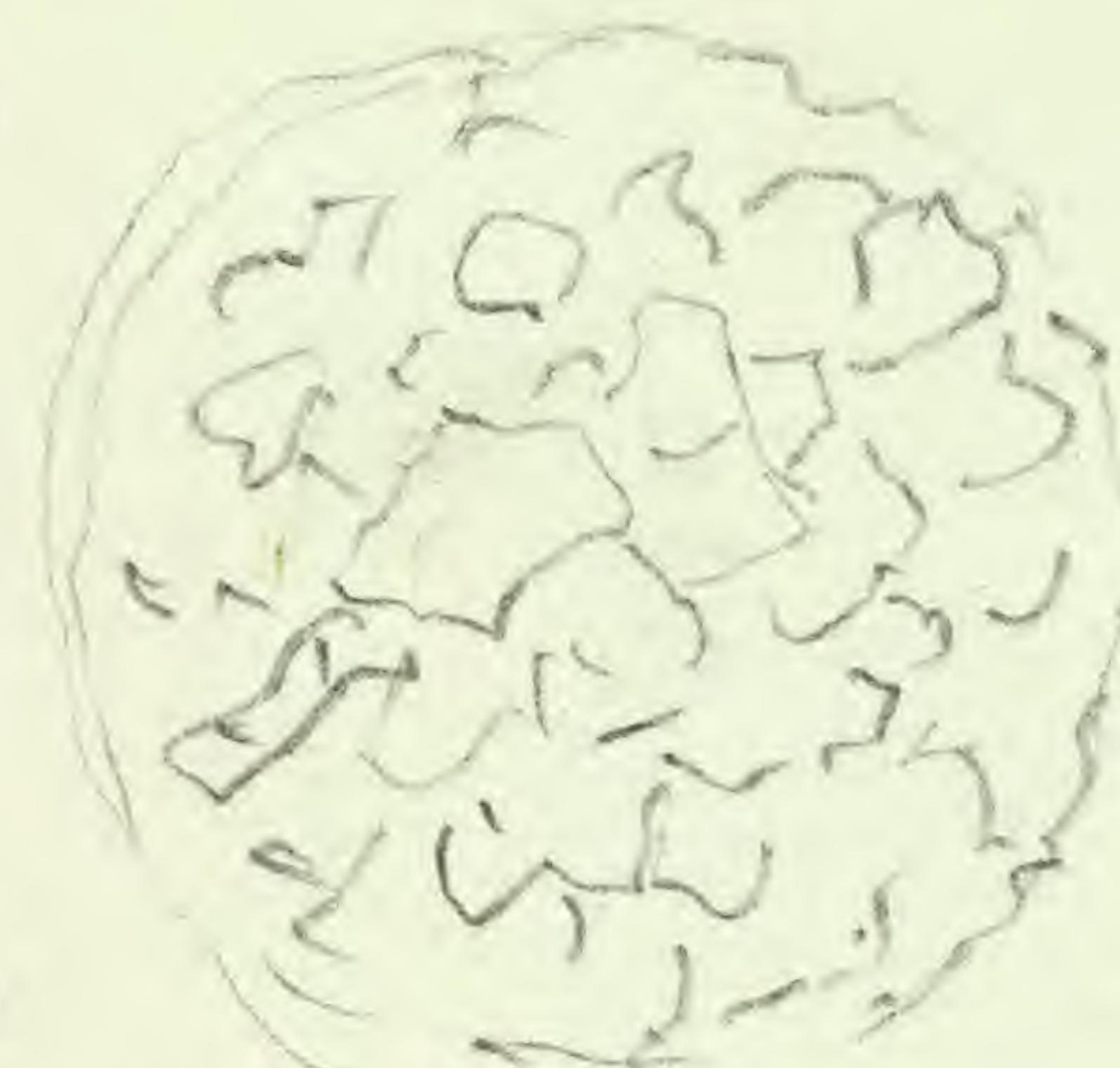
 1 1 1 1

23-28 mm, mostly 25-26  
60 60

very large, thick  
plant



upper part  
of spore more  
acute and very  
irregularly reticulated



base of spore  
more reticulated



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cm

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0 1 2 3 4 5 6 7 8 9 10

cm

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*Sectes ligulæ* var. <sup>deprepiata</sup> June 26 1867  
 Tidal shores of Passaic River  
 Prof Jacob C. Davis, begin of August  
(1858?)

11011

not quite ripe

$24-28 = 0.40-0.47$  mm

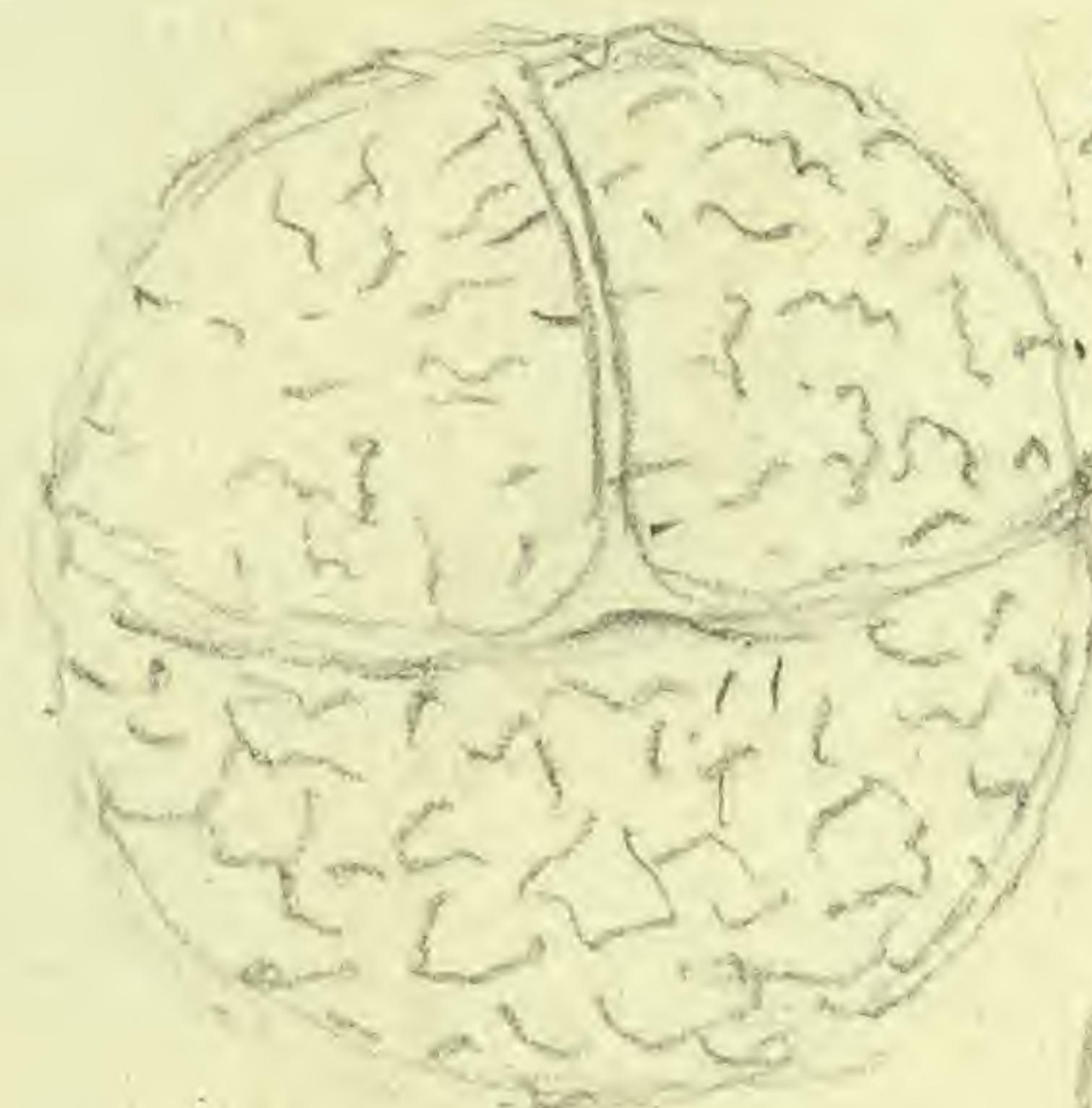
$60$  mostly  $0.42-0.44$

8-12 leaves

10-15 Costim.

$\times 10$

walls & tracheæ  
very thin the  
latter only 1 cell  
layer thick



$\times 60$

$\times 280$

anastomosing  
crested ridges  
but smoothly  
and only here sporangia  
and those reticul.

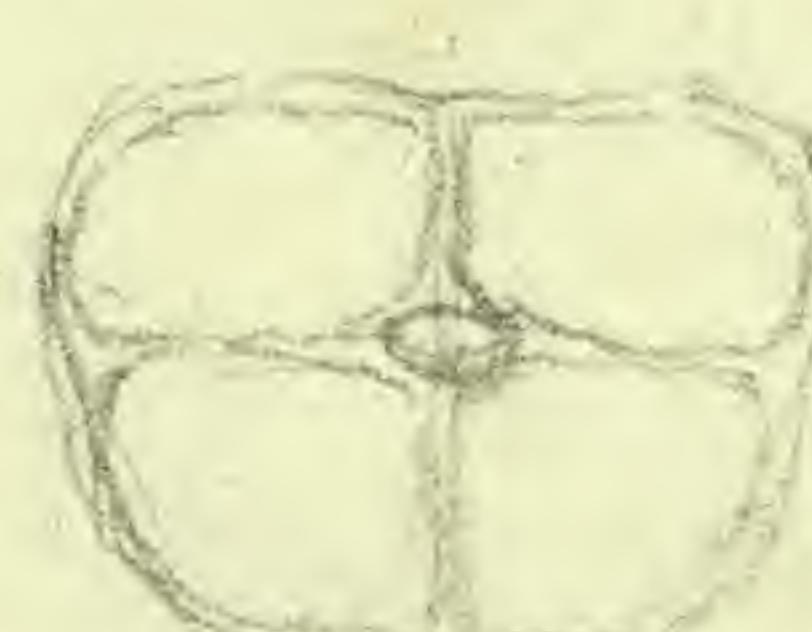
no scleroderm  
cells in thin  
and transparent

$\times 280$

white!

no microspores to be seen

I can recognize  
only 1 (or 2) very  
feeble but distinct



$\times 2$

largest spores  
soaked,  $\times 2$



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cm

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cm

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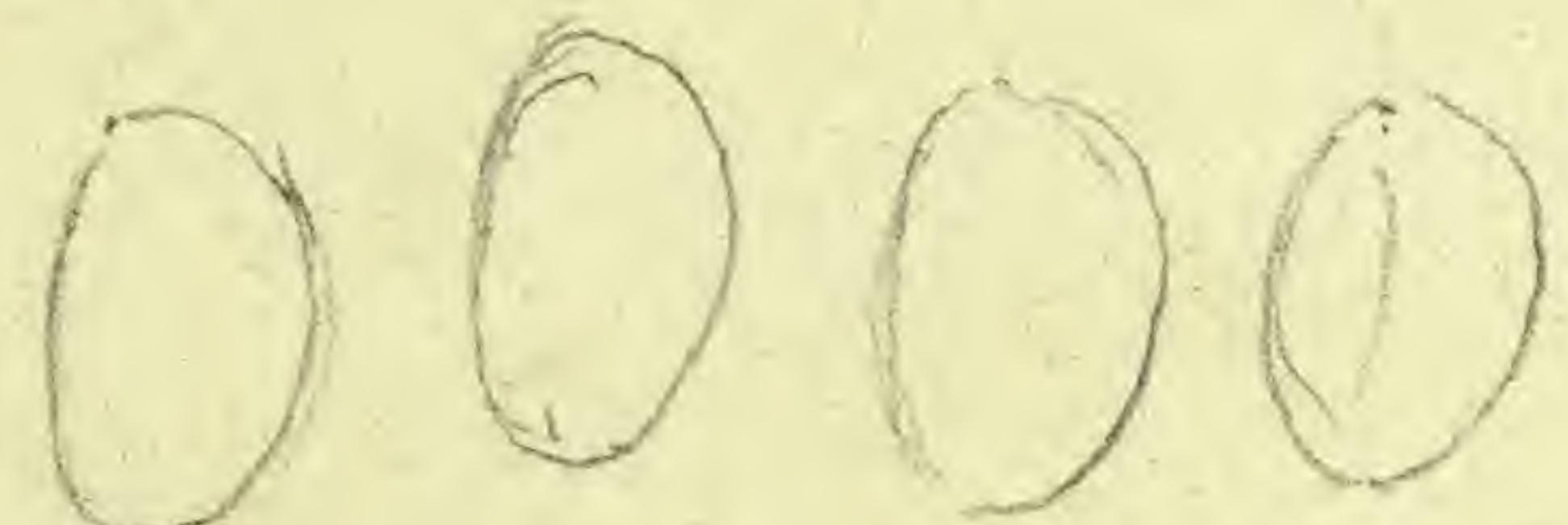
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*Drechsleria alpinum* Jan 10 1867  
Clarke's Pond, Brattleboro VT

C. C. Frost 1865 p2 - 18 leaves  
H. Mann mis

$$\frac{27-31}{60} = 0.45-0.52 \text{ mm}$$

reticulation of spots 7-12 cm long  
very distinct on all surfaces



0.022 - 0.025 mm

Submarginal in Spring



0 1 2 3 4 5 6 7 8 9 10

cm

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0 1 2 3 4 5 6 7 8 9 10

cm

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